

Working with Data in Python Cheat Sheet

Reading and writing files

| Package/Method | Description | Syntax and Code Example |
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| File opening modes | Different modes to open files for specific operations. | <p>Syntax: r (reading) w (writing) a (appending) + (updating: read/write) b (binary, otherwise text)</p> <p>Examples: with open("data.txt", "r") as file: content = file.read() print(content) with open("output.txt", "w")</p> |
| File reading methods | Different methods to read file content in various ways. | <p>Syntax:</p> <pre>file.readlines() # reads all lines as a list readline() # reads the next line as a string file.read() # reads the entire file content as a string</pre> <p>Example:</p> <pre>with open("data.txt", "r") as file: lines = file.readlines() next_line = file.readline() content = file.read()</pre> |
| File writing methods | Different write methods to write content to a file. | <p>Syntax:</p> <pre>file.write(content) # writes a string to the file file.writelines(lines) # writes a list of strings to the file</pre> <p>Example:</p> <pre>lines = ["Hello\n", "World\n"] with open("output.txt", "w") as file: file.writelines(lines)</pre> |
| Iterating over lines | Iterates through each line in the file using a 'loop'. | <p>Syntax:</p> <pre>for line in file: # Code to process each line</pre> |

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| | | <p>Example:</p> <pre>with open("data.txt", "r") as file: for line in file: print(line)</pre> |
| Open() and close() | Opens a file, performs operations, and explicitly closes the file using the close() method. | <p>Syntax:</p> <pre>file = open(filename, mode) # Code that uses the file file.close()</pre> <p>Example:</p> <pre>file = open("data.txt", "r") content = file.read() file.close()</pre> |
| with open() | Opens a file using a with block, ensuring automatic file closure after usage. | <p>Syntax:</p> <pre>with open(filename, mode) as file: # Code that uses the file</pre> <p>Example:</p> <pre>with open("data.txt", "r") as file: content = file.read()</pre> |

Pandas

| Package/Method | Description | Syntax and Code Example |
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| .read_csv() | Reads data from a `CSV` file and creates a DataFrame. | Syntax: dataframe_name = pd.read_csv("filename.csv") Example: df = pd.read_csv("data.csv") |
| .read_excel() | Reads data from an Excel file and creates a DataFrame. | Syntax: dataframe_name = pd.read_excel("filename.xlsx") |

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| | | <p>Example:</p> <pre>df = pd.read_excel("data.xlsx")</pre> |
| <code>.to_csv()</code> | <p>Writes DataFrame to a CSV file.</p> | <p>Syntax:</p> <pre>dataframe_name.to_csv("output.csv", index=False)</pre> <p>Example:</p> <pre>df.to_csv("output.csv", index=False)</pre> |
| <p>Access Columns</p> | <p>Accesses a specific column using [] in the DataFrame.</p> | <p>Syntax:</p> <pre>dataframe_name["column_name"] # Accesses single column dataframe_name[["column1", "column2"]] # Accesses multiple columns</pre> <p>Example:</p> <pre>df["age"] df[["name", "age"]]</pre> |
| <code>describe()</code> | <p>Generates statistics summary of numeric columns in the DataFrame.</p> | <p>Syntax:</p> <pre>dataframe_name.describe()</pre> <p>Example:</p> <pre>df.describe()</pre> |

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| drop() | Removes specified rows or columns from the DataFrame. axis=1 indicates columns. axis=0 indicates rows. | <p>Syntax:</p> <pre>dataframe_name.drop(["column1", "column2"], axis=1, inplace=True) dataframe_name.drop(index=[row1, row2], axis=0, inplace=True)</pre> <p>Example:</p> <pre>df.drop(["age", "salary"], axis=1, inplace=True) # Will drop columns df.drop(index=[5, 10], axis=0, inplace=True) # Will drop rows</pre> |
| dropna() | Removes rows with missing NaN values from the DataFrame. axis=0 indicates rows. | <p>Syntax:</p> <pre>dataframe_name.dropna(axis=0, inplace=True)</pre> <p>Example:</p> <pre>df.dropna(axis=0, inplace=True)</pre> |
| duplicated() | Duplicate or repetitive values or records within a data set. | <p>Syntax:</p> <pre>dataframe_name.duplicated()</pre> <p>Example:</p> <pre>duplicate_rows = df[df.duplicated()]</pre> |
| Filter Rows | Creates a new DataFrame with rows that meet specified conditions. | <p>Syntax:</p> <pre>filtered_df = dataframe_name[(Conditional_statements)]</pre> |

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| | | <p>Example:</p> <pre>filtered_df = df[(df["age"] > 30) & (df["salary"] < 50000)]</pre> |
| groupby() | <p>Splits a DataFrame into groups based on specified criteria, enabling subsequent aggregation, transformation, or analysis within each group.</p> | <p>Syntax:</p> <pre>grouped = dataframe_name.groupby(by, axis=0, level=None, as_index=True, sort=True, group_keys=True, squeeze=False, observed=False, dropna=True)</pre> <p>Example:</p> <pre>grouped = df.groupby(["category", "region"]).agg({"sales": "sum"})</pre> |
| head() | <p>Displays the first n rows of the DataFrame.</p> | <p>Syntax:</p> <pre>dataframe_name.head(n)</pre> <p>Example:</p> <pre>df.head(5)</pre> |
| Import pandas | <p>Imports the Pandas library with the alias pd.</p> | <p>Syntax:</p> <pre>import pandas as pd</pre> <p>Example:</p> |

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| | | <pre>import pandas as pd</pre> |
| info() | Provides information about the DataFrame, including data types and memory usage. | <p>Syntax:</p> <pre>dataframe_name.info()</pre> <p>Example:</p> <pre>df.info()</pre> |
| merge() | Merges two DataFrames based on multiple common columns. | <p>Syntax:</p> <pre>merged_df = pd.merge(df1, df2, on=["column1", "column2"])</pre> <p>Example:</p> <pre>merged_df = pd.merge(sales, products, on=["product_id", "category_id"])</pre> |
| print DataFrame | Displays the content of the DataFrame. | <p>Syntax:</p> <pre>print(df) # or just type df</pre> <p>Example:</p> <pre>print(df) df</pre> |

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| replace() | Replaces specific values in a column with new values. | <p>Syntax:</p> <pre>dataframe_name["column_name"].replace(old_value, new_value, inplace=True)</pre> <p>Example:</p> <pre>df["status"].replace("In Progress", "Active", inplace=True)</pre> |
| tail() | Displays the last n rows of the DataFrame. | <p>Syntax:</p> <pre>dataframe_name.tail(n)</pre> <p>Example:</p> <pre>df.tail(5)</pre> |

Numpy

| Package/Method | Description | Syntax and Code Example |
|-----------------|---|---|
| Importing NumPy | Imports the NumPy library. | <p>Syntax:</p> <pre>import numpy as np</pre> <p>Example:</p> <pre>import numpy as np</pre> |
| np.array() | Creates a one or multi-dimensional array, | <p>Syntax:</p> <pre>array_1d = np.array([list1 values]) # 1D Array array_2d = np.array([[list1 values], [list2 values]]) # 2D Array</pre> |

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| | | <p>Example:</p> <pre>array_1d = np.array([1, 2, 3]) # 1D Array array_2d = np.array([[1, 2], [3, 4]]) # 2D Array</pre> |
| <p>Numpy Array Attributes</p> | <ul style="list-style-type: none">- Calculates the mean of array elements- Calculates the sum of array elements- Finds the minimum value in the array- Finds the maximum value in the array- Computes dot product of two arrays | <p>Example:</p> <pre>np.mean(array) np.sum(array) np.min(array) np.max(array) np.dot(array_1, array_2)</pre> |



Skills Network

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